

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	22.56	144.85
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-1.24	-1.24

FILE 'REGISTRY' ENTERED AT 15:58:31 ON 15 AUG 2002
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STRUCTURE FILE UPDATES: 14 AUG 2002 HIGHEST RN 443957-06-0
 DICTIONARY FILE UPDATES: 14 AUG 2002 HIGHEST RN 443957-06-0

TSCA INFORMATION NOW CURRENT THROUGH MAY 20, 2002

Please note that search-term pricing does apply when
 conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Calculated physical property data is now available. See HELP PROPERTIES
 for more information. See STNote 27, Searching Properties in the CAS
 Registry File, for complete details:

<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

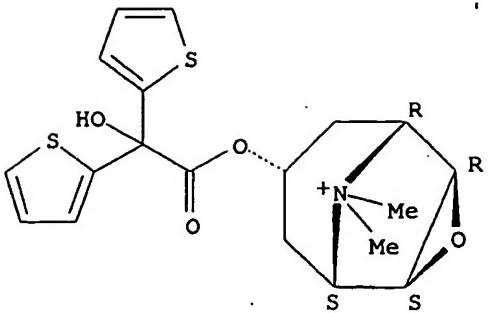
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=> s 411207-31-3
L9      1 411207-31-3
          (411207-31-3/RN)
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=> s 411207-31-3/rn
L10      1 411207-31-3/RN
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=> d 110
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L10  ANSWER 1 OF 1  REGISTRY  COPYRIGHT 2002 ACS
RN  411207-31-3  REGISTRY
CN  3-Oxa-9-azoniatricyclo[3.3.1.02,4]nonane, 7-[(hydroxydi-2-
     thienylacetyl)oxy]-9,9-dimethyl-, bromide, monohydrate,
     (1.alpha.,2.beta.,4.beta.,5.alpha.,7.beta.)- (9CI)  (CA INDEX NAME)
OTHER NAMES:
CN  Tiotropium bromide monohydrate
FS  STEREOSEARCH
MF  C19 H22 N O4 S2 . Br . H2 O
SR  CA
LC  STN Files: CA, CAPLUS
CRN (186691-13-4)
```

Relative stereochemistry.



● Br⁻

● H₂O

6 REFERENCES IN FILE CA (1967 TO DATE)
6 REFERENCES IN FILE CAPLUS (1967 TO DATE)

=> E BANHOLZER ROLE/AU 25

E1	1	BANHOLZER PETER/AU
E2	3	BANHOLZER R/AU
E3	41 -->	BANHOLZER ROLF/AU
E4	1	BANHOLZER RUDOLF/AU
E5	1	BANHOLZER THOMAS/AU
E6	1	BANHOLZER VIVIEN/AU
E7	9	BANHOLZER W/AU
E8	39	BANHOLZER W F/AU
E9	1	BANHOLZER WALTER/AU
E10	6	BANHOLZER WILLIAM/AU
E11	13	BANHOLZER WILLIAM F/AU
E12	15	BANHOLZER WILLIAM FRANK/AU
E13	1	BANHZOFL ANGELIKA/AU
E14	1	BANI A/AU
E15	1	BANI AKOTO E/AU
E16	5	BANI AKOTO ERNEST/AU
E17	1	BANI ANTONIO/AU
E18	1	BANI ASSADI SHADI/AU
E19	19	BANI D/AU
E20	31	BANI DANIELE/AU
E21	1	BANI E/AU
E22	1	BANI FWAZ MUTASEM Z/AU
E23	10	BANI G/AU
E24	10	BANI GASTONE/AU
E25	1	BANI HANI AHMAD/AU

=> S (E2 OR E3) AND (TIOTROPIUM)

3 "BANHOLZER R"/AU
41 "BANHOLZER ROLF"/AU
112 TIOTROPIUM

L1 2 ("BANHOLZER R"/AU OR "BANHOLZER ROLF"/AU) AND (TIOTROPIUM)

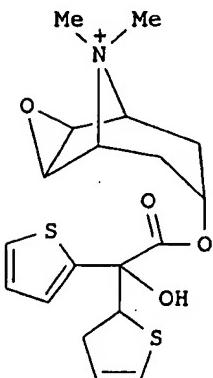
=> DIS L1 1- IBIB ABS

YOU HAVE REQUESTED DATA FROM 2 ANSWERS - CONTINUE? Y/(N):Y

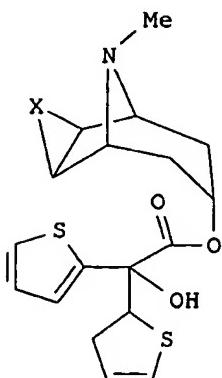
L1 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2003 ACS on STN
 ACCESSION NUMBER: 2002:484684 CAPLUS
 DOCUMENT NUMBER: 137:47348
 TITLE: Procedure for the production of the anticholinergic tiotropium bromide from tropenol
 INVENTOR(S): Banholzer, Rolf; Graulich, Manfred; Luettkke, Sven; Mathes, Andreas; Meissner, Helmut; Specht, Peter; Broeder, Wolfgang
 PATENT ASSIGNEE(S): Boehringer Ingelheim Pharma K.-G., Germany
 SOURCE: Ger. Offen., 12 pp.
 CODEN: GWXXBX
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10064816	A1	20020627	DE 2000-10064816	20001222
WO 2002051840	A1	20020704	WO 2001-EP14566	20011212
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,				

UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
 RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,
 CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 US 2002133010 A1 20020919 US 2001-25425 20011219
 US 6486321 B2 20021126
 US 6506900 B1 20030114 US 2002-223152 20020819
 PRIORITY APPLN. INFO.: DE 2000-10064816 A 20001222
 US 2001-265443P P 20010131
 US 2001-25425 A1 20011219
 OTHER SOURCE(S): CASREACT 137:47348; MARPAT 137:47348
 GI



I



II

AB The invention concerns a new procedure for the prodn. of (1.alpha.,2.beta.,4.beta.,5.alpha.,7.beta.)-7-[(hydroxydi-2-thienylacetyl)oxy]-9,9-dimethyl-3-oxa-9-azoniatricyclo[3.3.1.0_{2,4}]nonane bromide (I.cndot.Br-) is characterized by the oxidn. of tropenol ester II (X = bond) to scopine ester II (X = O) and then quaternization with MeBr to I.Br-.

L1 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2003 ACS on STN
 ACCESSION NUMBER: 2002:293650 CAPLUS
 DOCUMENT NUMBER: 136:314978
 TITLE: Crystalline tiotropium bromide monohydrate,
 method for producing the usage as inhalant powder
 INVENTOR(S): Banholzer, Rolf; Sieger, Peter; Kulinna,
 Christian; Trunk, Michael; Graulich, Manfred Ludwig
 August; Specht, Peter; Meissner, Helmut; Mathes,
 Andreas
 PATENT ASSIGNEE(S): Boehringer Ingelheim Pharma K.-G., Germany
 SOURCE: PCT Int. Appl., 22 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002030928	A1	20020418	WO 2001-EP11225	20010928

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
 CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,

GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PH, PL,
PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG,
US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY,
DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
US 2002169321 A1 20021114 US 2001-961822 20010924
AU 2002014996 A5 20020422 AU 2002-14996 20010928
EE 200300171 A 20030616 EE 2003-171 20010928
EP 1326862 A1 20030716 EP 2001-983510 20010928
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
NO 2003001694 A 20030411 NO 2003-1694 20030411
PRIORITY APPLN. INFO.: DE 2000-10050621 A 20001012
US 2000-249349P P 20001116
WO 2001-EP11225 W 20010928

AB The invention relates to a cryst. monohydrate of
(1.alpha.,2.beta.,4.beta.,5.alpha.,7.beta.)-7-[(hydroxydi-2-
thienylacetyl)oxy]-9,9-dimethyl-3-oxa-9-azo niaticyclo[3.3.1.0_{2,4}]nonane
bromide, (tiotropium bromide monohydrate), to a method for its
prodn., and to its use as inhaling powder with anticholinergic effect.
The process involves dissolving tiotropium bromide in water at a
temp. > 50.degree.C; clarifying with active carbon; filtration; cooling
and crystn. IR data and parameters of the monocline crystal are
presented. Tiotropium bromide monohydrate is produced for the
incorporation in inhaling powders to treat asthma and COPD.

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS
RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT